



## **Low Deposit, Low Return**

***Recommendations to decrease solid waste by capturing redeemables that are now lost to the waste stream.***

**A Special Report of the Council on Environmental Quality  
October 30, 2020**

### **Preface**

Connecticut could be on the threshold of a solid waste crisis, or of an innovative approach to handling its solid waste, or both. In 2016, approximately 100,000 tons per year of municipal solid waste (MSW) were sent out of state for disposal. That volume increased to approximately 400,000 tons in 2018. The waste-to-energy (WTE) facilities that Connecticut relied on for decades to dispose of eighty-seven percent (87%) of its solid waste might be less dependable destinations for the State's refuse in the future. Despite the air pollution, odor and traffic associated with WTE facilities, they offer a solution that was, historically, less expensive than shipping waste out of state. Of the seven WTE permitted facilities, one has stopped accepting waste (Sterling tire facility), one has ceased incineration and serves as a transfer station (Wallingford), and the Materials Innovation and Recycling Authority (MIRA) facility, located in Hartford, has raised the possibility that it may cease to accept and process MSW. In 2019, that location processed 482,260 tons of MSW. Consequently, with the potential loss of the MIRA WTE facility, in-state WTE capacity falls to approximately 1.5 million tons per year, a shortfall of over 700,000 tons per year.

Historically, Connecticut has been in the vanguard of programs to divert material from the waste stream and recover recyclable components. Its extended producer responsibility programs for used mattresses and paint offer a solution for what had been confounding problems for residents wishing to dispose of those problematic items. Other steps towards product stewardship were taken with electronics recycling and mercury thermostat recycling. Extended producer responsibility may become the centerpiece of the State's strategy for handling solid waste. At this writing, the Department of Energy and Environmental Protection (DEEP) has launched the Connecticut Coalition for Sustainable Materials Management (CCSMM) and has created an Extended Producer Responsibility (EPR) Working Group within it.

Unredeemed deposit beverage containers accounted for at least 17,000 tons of the MSW generated in Connecticut in 2015. The redemption mechanism operates with virtually no cost to taxpayers. The consuming public are the volunteers that make it work. It is privately financed, it rewards those who participate, it reduces the cost of waste disposal for residents and municipalities and it returns revenue to the State. This paper estimates that the percentage of unredeemed beverage containers that can be removed from the waste stream can be increased by a minimum of 50 percent with just a five-cent increase in the redemption fee. Further waste reduction is possible if the categories of beverage containers that could be subject to redemption are expanded.

Because beverage container redemption is a form of both extended producer responsibility and recycling, the success of the program is linked to the market for recycled materials. This has been an international market, but there are some steps that could be done domestically to improve the demand for recycled material. An important step towards

creating a more viable market for recyclables was taken with Connecticut General Statutes ([CGS](#)), [Sec. 4a-67](#) that encouraged State purchases of products with recycled content. More needs to be done. The beverage redemption program results in what is generally acknowledged to be cleaner, and consequently more marketable, recycled material. Presently, the redemption rate for redeemable beverage containers in Connecticut is only slightly more than half the redemption rate in states that have implemented a higher redemption fee.

This paper is not an examination of the State's pending waste disposal crisis or of methods, other than beverage container redemption, that have been proposed to reduce solid waste. It does not fully explore the intertwined economics of the marketability of recycled materials or of the demand for recycled material or the necessity for product stewardship and extended producer responsibility. It does illustrate the economic and environmental benefit that would accrue from an increase in the redemption fee and expansion of deposit beverage containers in the State.

## **Executive Summary**

In 1978, the state of Connecticut enacted legislation for a beverage container redemption program ("Bottle Bill"). It provides a financial incentive to consumers to redeem designated beverage containers for cash. The "Bottle Bill" complements the State's comprehensive recycling program and is an important component of the State's solid waste management strategy. It is essential to helping the State meet its goal of sixty percent diversion of solid waste by 2024.

During the last decade, the per capita amount of solid waste has declined and the per capita pounds of marketed recyclable materials has increased in the State. Over that same period, the redemption of eligible beverage containers has declined by approximately fifteen percent. This decline in the beverage container redemption rate comes at a time when there are additional pressures on solid waste management in the State, including a possible reduction in resource recovery capacity, shrinking markets and declining revenue for certain recyclable materials.

This paper analyzes the issues associated with beverage container redemption/recycling and makes [Recommendations](#) (see p. 16) to improve the implementation and efficacy of the "Bottle Bill".

### **Conclusions:** (pages on which these are discussed appear in parenthesis)

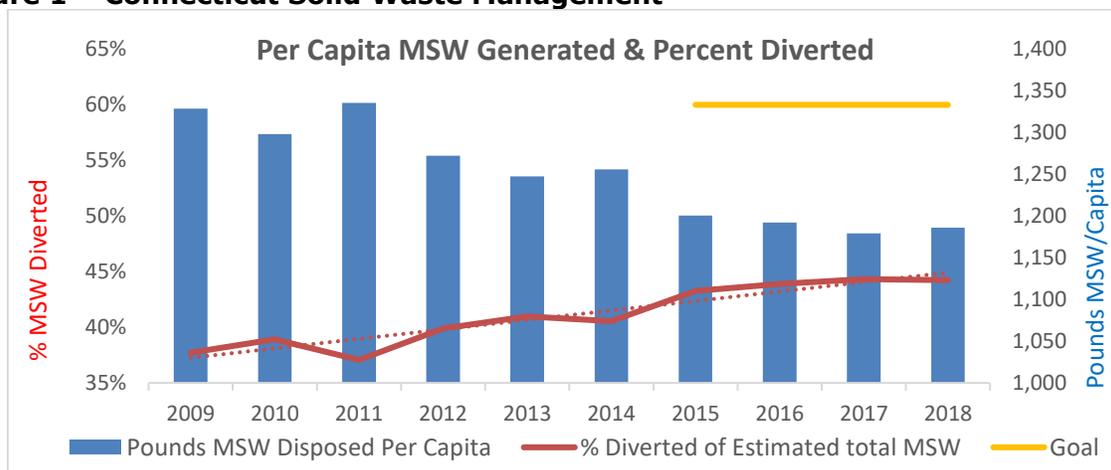
- Increasing the beverage container deposit can increase the redemptions rate for eligible beverage containers. (see pp. 8,9)
- Expanding the types beverage containers that would be subject to a deposit will potentially remove those materials from the municipal solid waste (MSW) stream and save money for taxpayers and municipalities. (see pp. 12,13)
- Increasing the handling fee for deposit beverage containers could improve operations at both retail establishments and redemption centers. Increasing both the number and geographic distribution of redemption centers in the state would increase convenience for consumers. (see pp. 13, 14)
- Increasing post-consumer recyclable content in the manufacture of new products could bolster the market for recycled materials. (see pp. 15,16)

## Connecticut is not Likely to Meet its Waste Diversion Goal

In July 2016, the Commissioner of DEEP adopted a Comprehensive Materials Management Strategy (CMMS), which is an update to the State’s Solid Waste Management Plan. The CMMS is a roadmap to achieving the state’s goal of sixty percent diversion of materials from disposal by 2024. According to DEEP’s CMMS, one of the strategies to achieve the sixty percent diversion of waste is to “develop and improve recycling and waste conversion technologies”<sup>1</sup>, which would boost recycling to forty-five percent. Several strategies can be employed to increase recycling rates. Among them are expansion of the beverage container deposit program and increasing the redemption rate for beverage containers in Connecticut.

In 2018 (most recent data available), an estimated 1.7 million tons (44.2 percent) of solid waste was diverted from disposal<sup>2</sup>. At the current rate, Connecticut will not achieve its goal of sixty percent “diversion” by 2024.

**Figure 1 – Connecticut Solid Waste Management**



## The Role of Recycling

Recycling is defined as “the recovery of materials, such as paper, glass, plastic, metals, construction and demolition (C&D) material and organics from the waste stream (e.g., municipal solid waste), along with the transformation of materials, to make new products and reduce the amount of virgin raw materials needed to meet consumer demands.”<sup>3</sup>

Connecticut General Statutes (CGS), Section 22a-207 (28) authorizes the Commissioner of DEEP to designate items for recycling. To date, the following items have been designated for recycling:

- |                                    |                                      |
|------------------------------------|--------------------------------------|
| 1) glass and metal food containers | 8) Ni-Cd rechargeable batteries      |
| 2) high grade white office paper   | 9) leaves                            |
| 3) old newspaper                   | 10) grass clippings                  |
| 4) scrap metal                     | 11) HDPE and PETE plastic containers |
| 5) old corrugated cardboard        | 12) boxboard                         |
| 6) waste oil                       | 13) magazines                        |
| 7) motor vehicle storage batteries | 14) colored ledger paper             |

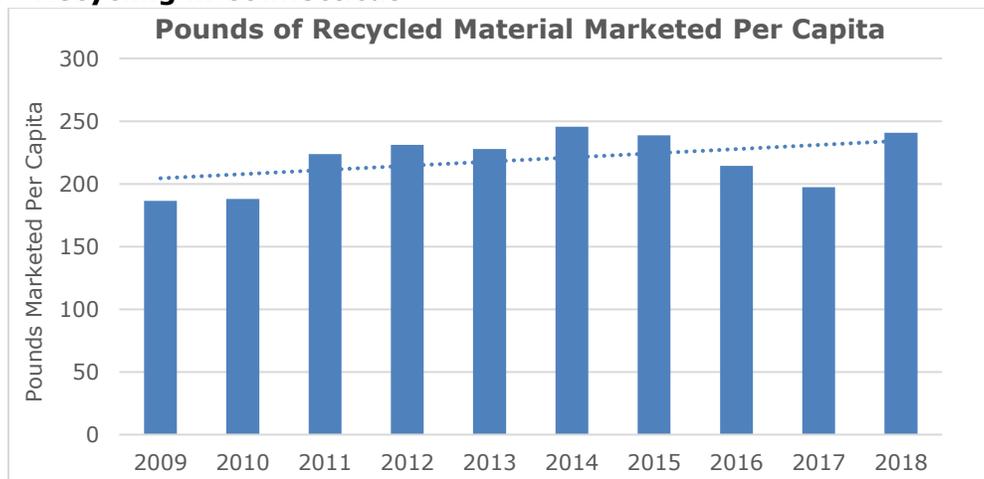
Recycling saves money for taxpayers and municipalities and offers many other environmental and social benefits:<sup>4</sup>

- Litter control;
- Conservation of natural resources such as timber, water and minerals;
- Increased economic security by using domestic sources of materials;
- Pollution prevention by reducing the need to collect new raw materials;
- Energy savings;
- Job creation; and
- Supports manufacturing industries in the United States (US).

In addition, recycling is calculated to have contributed approximately 675 jobs, \$32.7 million in wages, and over \$6 million in tax revenue to Connecticut’s economy in 2018.<sup>5</sup>

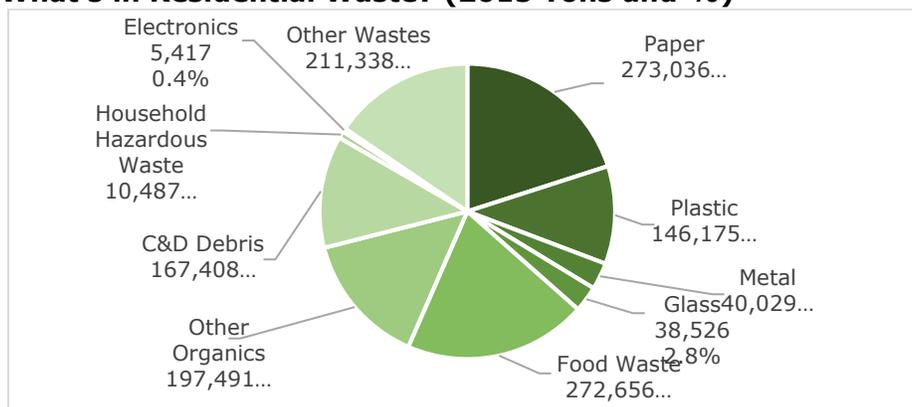
Connecticut residents’ recycle rate (pounds marketed per capita) has increased approximately fifteen percent over the last 10 years.

**Figure 2 - Recycling in Connecticut<sup>6</sup>**



As depicted below, plastic, glass and metal comprised approximately sixteen percent of residential MSW in 2015; approximately 4.8 percent of the recyclable containers in residential waste is estimated to be recoverable (Appendix B). Recoverable means that it is not contaminated.

**Figure 3 - What’s in Residential Waste? (2015 Tons and %)**



## **Beverage Container Redemption in Connecticut**

Connecticut's beverage container deposit program is part of Connecticut's recycling program and complements existing curbside recycling efforts. Connecticut has specific provisions for the implementation of a beverage container deposit program (AKA "Bottle Bill"), which provides a financial incentive (currently 5 cents) to recycle specific types of beverage containers. The law establishing the "Bottle Bill" program was enacted in 1978 and became effective January 1, 1980<sup>7</sup>. The "Bottle Bill" applies to containers that hold the following beverages: beer, carbonated soft drinks (including mineral waters and soda waters) and noncarbonated beverages (which means water, including flavored water, nutritionally enhanced water, or any type of water, but excluding juice and mineral water). See Appendix A.

CGS Section 22a-243 defines a "beverage container" as an individual, separate, sealed glass, metal or plastic bottle, can, jar or carton containing a carbonated or noncarbonated beverage, but does not include a bottle, can, jar or carton (A) three liters or more in size if containing a noncarbonated beverage, or (B) made of high-density polyethylene (HDPE).

CGS Section 22a-244 (a)(1) Every beverage container containing a carbonated beverage sold or offered for sale in this state, except for any such beverage containers sold or offered for sale for consumption on an interstate passenger carrier, shall have a refund value. Such refund value shall not be less than five cents and shall be a uniform amount throughout the distribution process in this state. (2) Every beverage container containing a noncarbonated beverage sold or offered for sale in this state shall have a refund value, except for beverage containers containing a noncarbonated beverage that are (A) sold or offered for sale for consumption on an interstate passenger carrier, or (B) that comprise any dealer's existing inventory as of March 31, 2009. Such refund value shall not be less than five cents and shall be a uniform amount throughout the distribution process in this state.

There is an exception to the "Bottle Bill" program for "any manufacturer who bottles and sells two hundred fifty thousand or fewer beverage containers containing a noncarbonated beverage that are twenty ounces or less in size each calendar year (CGS, Section 22a-245b).

### **How the "Bottle Bill" Works**

Connecticut's beverage container deposit program leverages a network of retailers, redemption centers<sup>a</sup>, distributors<sup>b</sup>, and most importantly, consumers.

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<sup>a</sup> CGS, Sec. 22a-243 (9) - "Redemption center" means any facility established to redeem empty beverage containers from consumers or to collect and sort empty beverage containers from dealers and to prepare such containers for redemption by the appropriate distributors.

<sup>b</sup> CGS, Sec. 22a-243 (6) - "Distributor" means every person who engages in the sale of beverages in beverage containers to a dealer in this state including any manufacturer who engages in such sale and includes a dealer who engages in the sale of beverages in beverage containers on which no deposit has been collected prior to retail sale.



Each retailer pays the distributor 5 cents for each beverage container delivered.



The consumer, in-turn, pays the retailer 5 cents for each beverage container purchased.



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The retailer or redemption center pays the consumer 5 cents for each container returned by the consumer.



The distributor then reimburses the retailer or redemption center 5 cents plus a handling fee of 1.5 or 2 cents for each deposit beverage container returned/redeemed.



The distributor pays the State of Connecticut the 5 cents for each unclaimed deposit<sup>8</sup>.

**Bottle Redemption is the Least Costly Recycling Modality for Taxpayers**

The work to collect and sort the beverage containers is done by the millions of consumers, which also keeps the amount of contamination very low. The assessment/deposit is collected and reimbursed by thousands of retailers and some redemption centers, which is convenient for consumers. The distributors have an important role of getting the consumers the products they want; paying the retailers and redemption centers for beverage containers redeemed; and paying the state for any unclaimed deposits. While the process noted above doesn't seem like it's the most efficient, there are no personnel or fiscal demands placed on municipalities.

## Redemption Fees are Determinative of Redemption Program Participation

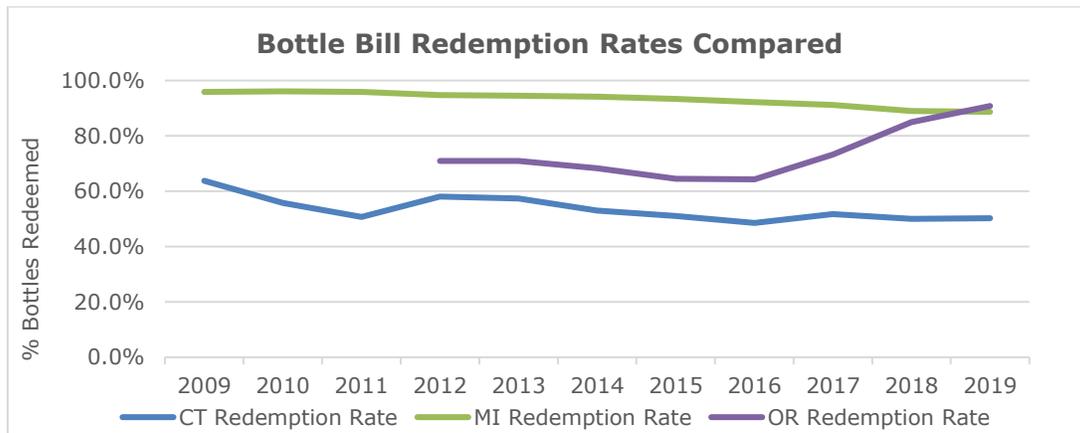
The chart below depicts the states that have beverage container redemption programs and it indicates the relationship between the amount of the deposit fee and the rate at which containers are redeemed. There does not appear to be a correlation between the handling fee and the rate of redemption.

**Table 1**

<b>Beverage Container Redemption Programs in Ten States<sup>9</sup></b>			
<b>State</b>	<b>Deposit</b>	<b>Handling Fees</b>	<b>Redemption Rate</b>
California	5¢: under 24oz and 10¢ for 24oz and greater	2.224¢ per container (2018)	77% (2019)
Connecticut	5¢	Beer 1.5¢, other beverages 2¢	51.7% (2019)
Hawaii	5¢ (+1¢ non-refundable fee)	2¢-4¢	60.1% (FY20)
Iowa	5¢	1¢	64% (2016 estimated)
Maine	Wine/liquor 50mL and above: 15¢ All others: 5¢	4¢	84% (2017 – estimated)
Massachusetts	5¢	3.25¢ paid to redemption centers, 2.25¢- retailers	50% (FY 2019)
Michigan	10¢	none	88.7% (2019)
New York	5¢	3.5¢	65% (2019)
Oregon	A combination of 5¢ and 10¢ for 2017; current - 10¢	None	90.8% (2019)
Vermont	liquor: 15¢ All others: 5¢	4¢ for brand-sorted containers and 3.5¢ for commingled brands	71% (QTR 1+2, 2020)

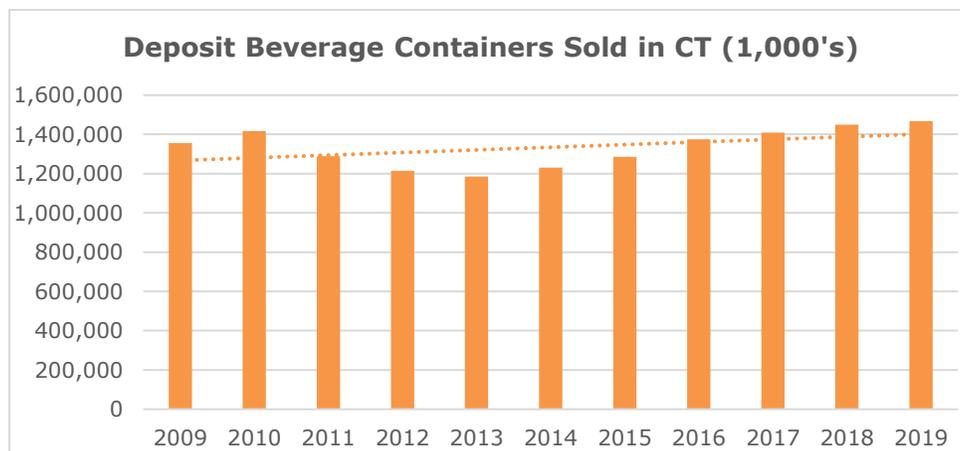
Figure 4 below, illustrates the relationship between deposit fee and the rate of redemption for three states. Over the past ten years, the redemption rate in Connecticut for designated beverage containers has declined by approximately sixteen percent to approximately fifty percent in 2019. Two states that have a 10 cent per beverage container deposit are Oregon and Michigan. For 2019 (most recent data available), Michigan had a redemption rate of approximately eighty-nine percent and Oregon had a redemption rate of approximately ninety-one percent. Oregon’s beverage container deposit increased from 5 cents per container to 10 cents per container in 2017. Increasing the beverage container deposit in Oregon in 2017 resulted in a higher redemption rate: sixty-four percent in 2016, seventy-three percent in 2017, and eighty-five percent in 2018. The redemption rate in Oregon, shown in the chart below, increased from fifty-nine percent in the first quarter of 2017 to eighty-two percent for the final three quarters of 2017 after the increase in the deposit (from 5 cents to 10 cents) for beverage containers. (See Appendix A for a comparison of the beverage container redemption program for Michigan, Oregon, and Connecticut)

**Figure 4 – Comparison of the Beverage Container Redemption Rates for Connecticut, Oregon and Michigan <sup>10</sup>.**



In 2019, 1.46 Billion beverage containers sold in Connecticut had a container deposit. However, only about 737 million beverage containers were redeemed.

**Figure 5 - Beverage Containers Sold in Connecticut with a Deposit (1,000s)**



**Lost = Cost**

While the number of beverage containers sold in the state has increased over the last ten years, the redemption rate has declined. That means more beverage containers are being thrown out or recycled some other way, such as by curbside recycling efforts. Unfortunately, not all recyclable containers in residential MSW are recovered in the existing curbside recycling programs (See Appendix B)

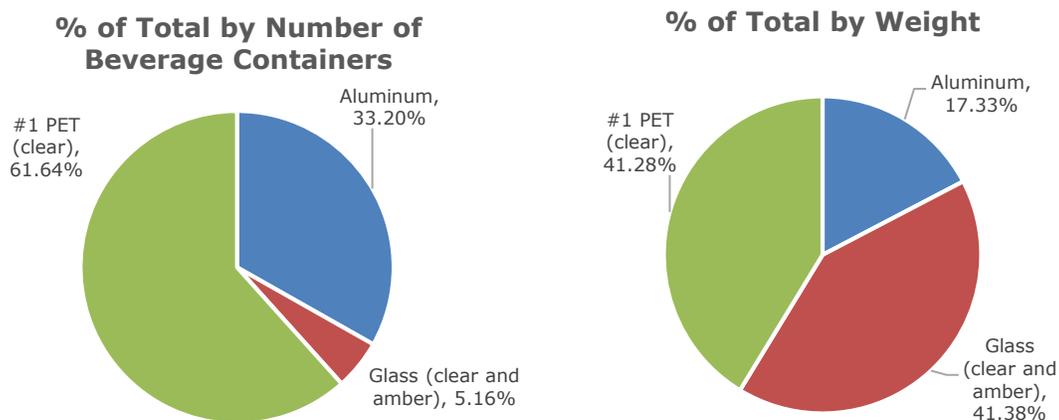
The presence of deposit beverage containers in the waste stream costs residents money. Ultimately, they pay for the collection, processing, and disposal of the unredeemed beverage containers. According to DEEP’s 2016 Waste Characterization Study, (summarized below) MSW in Connecticut contained 7,293 tons of polyethylene terephthalate (PET) plastic deposit beverage containers; 3,062 tons of aluminum deposit beverage containers; and 7,311 tons of glass deposit beverage containers for a total of 17,666 tons. While not all of this material is recoverable due to contamination, more needs to be done to reduce the amount of deposit-eligible beverage containers in MSW.

Evidence from other jurisdictions indicates that “pay-to-throw”<sup>c</sup> programs, which are designed to motivate people to recycle more or to think about ways to generate less waste, result in a higher rate of recycling.<sup>11</sup> There are not studies indicating their effect on beverage container redemptions, though it is logical to assume a positive correlation would exist.

**Table 2**

<b>Deposit Containers in Connecticut’s MSW (2015)</b>			
	<b>Aluminum</b>	<b>Glass (clear and amber)</b>	<b>#1 PET (clear)</b>
<b>Containers per pound</b>	29.5	1.92	23
<b>Tons in MSW</b>	3,062	7,311	7,293
<b>Pounds in MSW</b>	6,124,000	14,622,000	14,586,000
<b>Number of Containers in MSW</b>	180,658,000	28,074,240	335,478,000
<b>% of Total by Weight</b>	17.33%	41.38%	41.28%
<b>% of Total by Number</b>	33.20%	5.16%	61.64%
<b>Potentially Recoverable in Existing curbside (residential only)<sup>d</sup></b>	8,671,584	1,347,564	16,102,944

**Figure 6 – Percent of Deposit Containers in Connecticut’s MSW (2015) by Number and Weight**



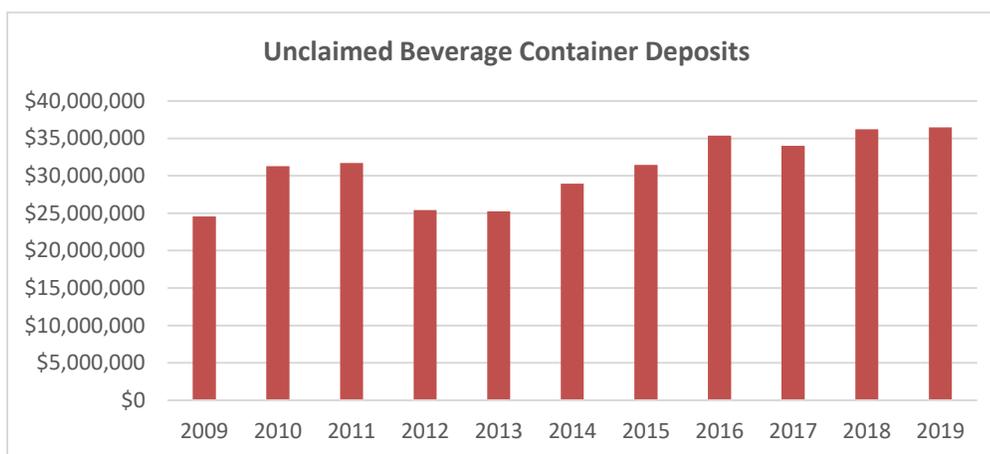
Based on the experience of other states, increasing the deposit fee would increase the redemption rate, which would reduce the amount of deposit beverage containers in MSW and save Connecticut’s towns and cities approximately \$1.5 million per year<sup>e</sup> in disposal costs. As noted above, the “Bottle Bill” program provides a financial incentive to recycle designated beverage containers. However, the current financial incentive of 5 cents may be insufficient to sustain a high (85%+) redemption rate. The purchasing power of 5 cents in 1980 is not the same as the purchasing power of 5 cents today. In fact, 5 cents in 1980 had the same buying power as seventeen cents today.<sup>12</sup>

<sup>c</sup> A “pay-to-throw” program is a system where residents are asked to pay for waste deposition directly - based on the amount of garbage they actually dispose.

<sup>d</sup> Based on a recoverability rate of 4.8%;

<sup>e</sup> The sum of the Connecticut deposit containers in MSW (tons) times \$83 per ton.

**Figure 7 - Revenue from Unclaimed Beverage Container Deposits**



As depicted above, in both 2018 and 2019, over \$36 million in unclaimed beverage container deposits were collected by the Department of Revenue Services and went into a special trust fund for the state.

The “Bottle Bill” program is meant to encourage recycling and reduce litter and is not merely a mechanism to generate more revenue for the state. However, there is a fiscal impact of beverage container recycling on the State that is a function of the deposit fee and the redemption rate. It is expected that increasing the value of the beverage container deposit from 5 cents to 10 cents will increase the redemption rate here in Connecticut, as it has done in other states. The fiscal impact on the “unclaimed” deposits from increasing the redemption rate from 5 cents to 10 cents is calculated below.

**Table 3**

<b>Potential Fiscal Impact of Increasing the Deposit Amount and Redemption Rate in Connecticut</b>					
		Historical	Projected		
<b>Deposit Amount</b>	<b>Containers Assessed a Deposit (2019)</b>	<b>Deposits</b>	<b>Redemption Rate</b>	<b>Unclaimed Deposits</b>	<b>Containers Redeemed</b>
5¢	1,467,074,908	\$73,353,745	50.26%	\$36,484,223	737,390,448
10¢	1,467,074,908	\$146,707,491	75.13%	\$36,484,223	1,102,232,678
10¢	1,467,074,908	\$146,707,491	80.00%	\$29,341,498	1,173,659,926
10¢	1,467,074,908	\$146,707,491	85.00%	\$22,006,124	1,247,013,672
10¢	1,467,074,908	\$146,707,491	90.00%	\$14,670,749	1,320,367,417
10¢	1,467,074,908	\$146,707,491	95.00%	\$7,335,375	1,393,721,163

Doubling the deposit could increase the redemption rate by fifty percent. This could result in the same revenue from unclaimed deposits, but increase the number of beverage containers being redeemed by approximately 365 million. If the redemption rate in Connecticut increased to ninety percent (consistent with the redemption rate in Michigan), over 656 million more beverage containers would be removed from the waste stream. This would reduce the cost of waste disposal and advance the State to its goal of sixty percent diversion by 2024. As detailed above, a redemption rate greater than seventy-five percent would significantly reduce the number of beverage containers in MSW, but would also reduce the amount of unclaimed deposits that currently goes to the State.

If an increase in the rate of redemptions results in a decrease in State revenue from the unclaimed deposits, some of the lost revenue could be partially offset by an expansion of the beverage container types eligible for redemption. Such an expansion of the beverage containers subject to the "Bottle Bill" deposit would increase the number of containers redeemed and reduce the amount of beverage containers in the waste or recycling stream further.

Since 2011, over a dozen bills have been introduced in the Connecticut General Assembly to expand the "Bottle Bill" program to include a variety of beverages including wine and liquor, juice, tea, and sports drinks (Appendix C). Some of these bills also included provisions for increasing the beverage container deposit and including high-density polyethylene (HDPE) plastic bottles, which are currently exempt.

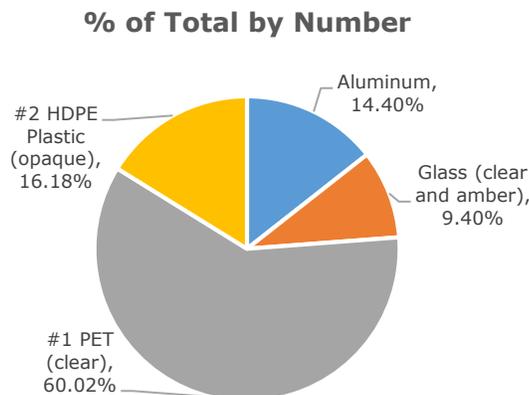
According to the DEEP's 2015 Waste Characterization Study, there were approximately 2,500 tons of non-deposit aluminum beverage containers, 25,000 tons of non-deposit clear and amber glass, 13,300 tons of PET bottles and jars, and over 12,000 tons of HDPE bottles in the MSW.

**Table 4**

<b>Recyclable Materials in MSW (2015) – (Does not include CT deposit beverage containers)</b>				
	<b>Aluminum</b>	<b>Glass (clear and amber)</b>	<b>#1 PET (clear)</b>	<b>#2 HDPE Plastic (opaque)</b>
<b>Containers per pound</b>	29.5	1.92	23	6.9
<b>Tons in MSW</b>	2,502	25,100	13,378	12,018
<b>Pounds in MSW</b>	5,004,000	50,200,000	26,756,000	24,036,000
<b>Potentially available containers</b>	147,618,000	96,384,000	615,388,000	165,848,400
<b>% of total by weight</b>	4.72%	47.36%	25.24%	22.68%
<b>% of total by number</b>	14.40%	9.40%	60.02%	16.18%

As depicted below, the largest opportunity for expansion of the beverage container redemption program by quantity of containers rather than by weight is PET clear bottles followed by HDPE bottles and aluminum containers.

**Figure 8 – Percent of Non-deposit Containers in Connecticut's MSW by Number**



And even though, not all of the containers in the MSW may be appropriate for beverages, the table below details how many of these containers could be removed from the MSW and how much additional revenue could be generated by unredeemed deposits if just twelve percent<sup>f</sup> of all available non-deposit containers were designated for the beverage container redemption program.

**Table 5**

<b>CT Non Deposit Containers in MSW (2015)</b>		
	<b>Number of Aluminum, Glass (clear and amber), #1 PET (clear), and #2 HDPE Plastic</b>	<b>Projected Unredeemed Deposits (10¢)</b>
<b>Additional containers</b>	859,390,000	
<b>Assume 12% suitable for deposit</b>	123,028,608	
<b>75% redemption rate</b>	92,271,456	\$3,075,715
<b>80% redemption rate</b>	98,422,886	\$2,460,572
<b>85% redemption rate</b>	104,574,317	\$1,845,429
<b>90% redemption rate</b>	110,725,747	\$1,230,286

### Handling Fee

The Connecticut bottle redemption system is convenient for consumers. Consumers can redeem beverage containers to retail outlets (stores must take back the brands that they offer for sale) or redemption centers. Redemption centers, however accept all brands that are labeled for redemption in Connecticut. The added convenience of not having to separate bottles according to who sells them, makes returning beverage containers to redemption centers easy for individuals who supplement their income with redeemed bottles. It also provides a redemption location for people who collect discarded bottles. Additionally, many groups that collect large quantities of cans/bottles for fundraising activities bring their deposit beverage containers to a redemption center. Redemption centers are private businesses that work with distributors to redeem beverage containers with a deposit value.

Connecticut’s “Bottle Bill” program also has provisions for a handling fee, which is paid by the distributor to cover part of the cost of collecting and processing the redeemed beverage containers.

CGS Section 22A-245(d) states “In addition to the refund value of a beverage container, a distributor shall pay to any dealer or operator of a redemption center a handling fee of at least one and one-half cents for each container of beer or other malt beverage and two cents for each beverage container of mineral waters, soda water and similar carbonated soft drinks or noncarbonated beverage returned for redemption. A distributor shall not be required to pay to a manufacturer the refund value of a nonrefillable beverage container. “

<sup>f</sup> A 12 percent suitability rate would equal approximately 120 million more containers. That is approximately the same estimated quantity, per the Container Recycling Institute, if non- carbonated, non-alcoholic beverages, and wine and liquor containers were added to Connecticut’s beverage container redemption program.

Distributors pay a handling fee (1.5-2 cents per container) to retailers and redemption centers to collect and process the redeemed beverage containers, but that cost is ultimately borne by the consumer and it is not part of the beverage container deposit. The amount of the handling fee is not necessarily a good indicator of program success but may be a factor affecting the profitability of redemption centers, which ultimately impacts convenience to the consumer. As with the bottle deposit, the handling fee discussed above has not increased over time.

In California, the handling fees are paid through the unredeemed deposits at a value that is calculated, by the state of California, based on the actual cost to collect and process the designated beverage containers at recycling/redemption centers. These handling fees or processing payments<sup>9</sup> in California are determined, in part, through a processing fee cost survey of recyclers across the State. In California, retailers are not required to accept beverage containers for redemption, but there are significantly more redemption sites (674 processing fee sites and 669 handling fee sites)<sup>13</sup> than in Connecticut (17 registered redemption centers)<sup>14</sup>

### **The Economics of Waste Diversion and Bottle Recycling**

As noted above, recycling is an important strategy for achieving the goal of sixty percent diversion of waste in Connecticut and reducing the amount of waste sent to landfills and resource recovery facilities (incinerators). Depicted above in Figure 1 is the percentage of solid waste diverted from the waste stream. It has been generally increasing over the last ten years, which means that more waste is being reduced at the source, recycled, or managed in some way other than landfilling or incineration.

In 2019, the cost of disposing of MSW at one of the WTE facilities in Connecticut was approximately \$83 per ton ("tipping fee")<sup>15</sup>. In addition, the potential closure of one or more resource recovery facilities in Connecticut would likely result in increased transportation costs to transport the MSW out of state, which would ultimately increase costs to some Connecticut residents. This tipping fee is substantially more than the net cost to process and market recyclables, meaning that diversion of recyclables from the waste stream saves money.

A recent survey<sup>16</sup> of materials recycling facilities (MRF) reported on the value of recyclables in the Northeast U.S. The average commodity value for recyclables (including handling costs) was \$46.06 per ton for recyclables that include residuals (contaminants disposed of as MSW) and \$53.8 per ton without residuals. The same survey found that the blended average cost (both single stream and dual stream) for processing recyclables during the survey period (January – March 2020) was \$91 per ton. Subtracting the average of the commodity values of recyclables with residuals and without residuals (\$49.93) from the blended average of the processing costs (\$91) yields an averaged net cost of just over \$41 per ton to process and market recyclables. This cost is still approximately \$42 per ton less than the estimated \$83 tipping fee at a resource recovery facility, resulting in a savings of approximately fifty percent for recycled material.

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<sup>9</sup> Processing payments are defined as the difference between the statewide, weighted-average cost of recycling a beverage container material in the program, including a reasonable financial return (RFR), a cost of living adjustment (COLA), and the scrap value for the material.

## Recyclable Markets

As detailed below, the market value for certain recyclables, especially glass, has decreased significantly in the eight months from October 2019 to July 2020. In Connecticut, glass made up approximately forty-seven percent of all recyclable beverage containers (by weight) in MSW; however, the marketability of recycled glass in the present market, based on its current value, is challenging.

**Table 6**

<b>California Department of Resources Recycling and Recovery Monthly Statewide Weighted Average Scrap Values (\$/ton) for Beverage Container Material Types<sup>17</sup></b>					
	<b>Aluminum</b>	<b>Glass</b>	<b>Bimetal</b>	<b>#1 PET Plastic</b>	<b>#2 HDPE Plastic</b>
<b>October 2019</b>	\$1,031.29	(\$2.44)	\$1.60	\$130.78	\$146.29
<b>November 2019</b>	\$1,063.33	(\$2.46)	\$1.06	\$145.29	\$178.72
<b>December 2019</b>	\$1,062.90	(\$4.11)	\$2.49	\$160.78	\$246.39
<b>January 2020</b>	\$1,068.71	\$3.08)	\$2.19	\$181.98	\$264.96
<b>February 2020</b>	\$1,033.45	(\$2.98)	\$0.49	\$177.76	\$212.93
<b>March 2020</b>	\$999.35	(\$4.25)	\$0.72	\$153.90	\$184.53
<b>April 2020</b>	\$813.99	(\$8.79)	\$0.85	\$167.80	\$148.34
<b>May 2020</b>	\$797.10	(\$6.26)	\$0.33	\$176.51	\$113.92
<b>June 2020</b>	\$899.33	(\$6.84)	\$0.22	\$105.06	\$144.42
<b>July 2020</b>	\$949.35	(\$8.14)	\$0.07	\$66.86	\$143.69

The average commodity value for recyclables, like all commodities, varies based on several factors, including supply and demand. There has been a significant change in the scrap value for recyclables, including beverage container materials, due in large part to the recent downturn in the global economy and restrictions placed on recovered materials imported into China<sup>18</sup>.

Increasing the amount of post-consumer recycled content in products sold in Connecticut and elsewhere can help to improve the markets for recycled materials. In fact, Connecticut has already enacted legislation that was designed to support “efforts to increase state purchase of goods containing recyclable materials and goods capable of being recycled or remanufactured.”

In addition, CGS Sec. 4a-67 states that “the Department of Administrative Services<sup>19</sup> shall establish procedures that promote, to the greatest extent feasible, the procurement and use of recycled products and environmentally preferable products, services, and practices by state agencies.”

CGS Sec. 4a-67a states (a) The Commissioner of Administrative Services shall, whenever practicable, make efforts to increase state procurement of goods that contain recycled materials and products that are recyclable or remanufactured, as defined in subsection (c) of section 4a-59. Such efforts may include: (1) Requiring replies to state agency bid specifications to include a statement of postconsumer and secondary waste content; (2) establishing minimum goals for state purchase of white bond and other paper with specified postconsumer and secondary waste content and a schedule for the accomplishment of such goals; (3) requiring bids to be accompanied by statements assessing the ability of the materials to be recycled or products to be recycled or remanufactured and assessing the extent to which there are established recycling programs which would facilitate recycling or remanufacturing; (4) authorizing the Department of Administrative Services to substitute similar but different paper products to meet agency orders if the substitute has a higher postconsumer waste content; (5) requiring the Department of Administrative Services to revise a specification to eliminate requirements which favor virgin over recycled materials unless there is a compelling reason for the specification; ...

It is unlikely that the State’s purchases, alone, will support a robust market for recyclable materials. However, there have been legislative proposals in Connecticut to increase the amount of post-consumer recycled content in products sold statewide (Appendix D).

## **Conclusion**

The beverage container deposit program or “Bottle Bill” encourages recycling through a financial incentive to consumers. Diversion by recycling is an important component of the State’s strategy for increasing the MSW diversion rate in the State. However, the success of the beverage container deposit program in Connecticut and the redemption rate for deposit beverage containers has been declining for at least the last ten years. Increasing the beverage container deposit and possibly expanding the types of beverage containers that could have a deposit would increase the redemption of beverage containers and reduce the number of “deposit-ready” beverage containers in MSW. Furthermore, the potential loss of capacity of Connecticut’s resource recovery facilities will increase the transportation and disposal costs of MSW that are sent to those facilities. This is an obvious financial incentive for state leaders to increase the redemption rate for existing deposit beverage containers and reduce the amount of “deposit ready” containers in the MSW stream.

In addition, increasing the handling fee, by leveraging a portion of the unclaimed deposits, could 1) increase the number and geographic distribution of redemptions centers in the state, and 2) support efficient operations for small retail businesses without increasing costs to distributors or consumers. Lastly, efforts to support a robust recyclables market in the Northeast would benefit from a requirement to increase the amount of post-consumer recycled content for certain products sold in the state.

## Recommendations:

- 1. Increase the beverage container deposit from 5 cents to 10 cents per container.**  
It has been shown in other states that increasing the beverage container deposit increases the redemption rate for eligible beverage containers. (pp.8, 9)
- 2. Expand the types of beverage containers that would be subject to a deposit.**  
Expanding the types of beverages and beverage containers that would be subject to a deposit will reduce those materials from the MSW stream. It will also expand the State's receipts from unredeemed containers. (pp.12, 13)
- 3. DEEP should assess the true cost of "handling", i.e. the collecting, storing, and shipping redeemed beverage containers; and recommend to the Legislature an appropriate increase in the handling fee to benefit retailers and redemption centers.**  
If the beverage distributors pay the handling fee, it will probably be passed on to the consumer. Allocating a portion of the "unclaimed" deposits could be the source for the increase and would not impact the cost to consumers or distributors. (pp. 13, 14)
- 4. DEEP, in consultation with retailers, manufacturers and recycling businesses in the state, should develop recommendations for recycled content requirements for products sold in the state and recommendations for multi-state coordination in the development of such recycled content standards.**  
Increasing the amount of recycled content in products should bolster the recyclables market. (pp. 15,16)

## About the Council on Environmental Quality

The duties of the Council on Environmental Quality (CEQ) are described in Sections [22a-11 through 22a-13](#) of the Connecticut General Statutes.

The Council is a nine-member board that works independently of the Department of Energy and Environmental Protection (except for administrative functions). The Chairman and four other members are appointed by the Governor, two members by the President Pro Tempore of the Senate and two by the Speaker of the House. The Council’s primary responsibilities include:

- Submittal to the Governor of an annual report on the status of Connecticut’s environment, including progress toward goals of the statewide environmental plan, with recommendations for remedying deficiencies of state programs.
- Review of state agencies’ construction projects.
- Investigation of citizens’ complaints and allegations of violations of environmental laws.

In addition, under the Connecticut Environmental Policy Act (CEPA) and its attendant regulations, the Council reviews Environmental Impact Evaluations that state agencies develop for major projects. The Council publishes the *Environmental Monitor*, the official publication for Scoping Notices, Post-Scoping Notices, Records or Decision, and Environmental Impact Evaluations for state projects under CEPA. The *Environmental Monitor* also is the official publication for notice of intent by state agencies to sell or transfer state lands.

Council Members		
Keith Ainsworth	Alicea Charamut	Lee E. Dunbar
Alison Hilding	David Kalafa	Kip Kolesinskas
Matthew Reiser	Charles Vidich	

*Additional information about the Council members is available on the CEQ’s [website](#).*

### Contact the CEQ

**Website:** [portal.ct.gov/ceq](http://portal.ct.gov/ceq) (for this and all Council

**publications) Mail:** 79 Elm Street, Hartford, CT 06106

**Phone:** 860-424-4000 (messages can be left 24 hours a day)

**E-mail the Council’s Executive Director:** [Peter.Hearn@ct.gov](mailto:Peter.Hearn@ct.gov)

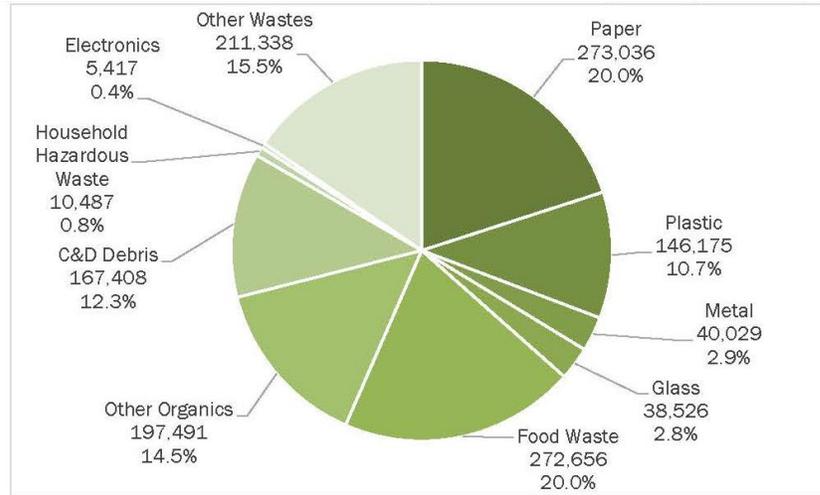


**Appendix A – Comparison of Redemption Programs for Connecticut, Oregon and Michigan<sup>20</sup>**

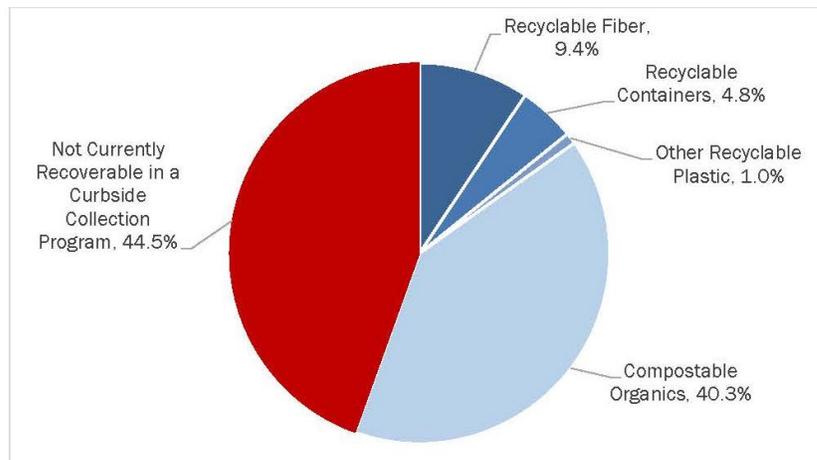
	<u>Connecticut</u>	<u>Oregon</u>	<u>Michigan</u>
<b>Beverages Covered</b>	Beer; malt; carbonated soft drinks (including mineral waters and soda waters); noncarbonated beverages (water, including flavored water, nutritionally enhanced water)	<b><u>Beverages ≤ 3L:</u></b> Beer/malt beverages; water, flavored water, soda water, and mineral water; Carbonated soft drinks <b><u>Beverages between 4 oz and 1.5L:</u></b> tea, coffee, hard cider, fruit juice, energy and sports drinks, coconut water	Soft drinks, soda water, carbonated natural or mineral water, or other nonalcoholic carbonated drink; beer, ale, or other malt drink of whatever alcoholic content; or a mixed wine drink or a mixed spirit drink. Kombucha added in 2019.
<b>Containers Covered</b>	Any individual, separate, sealed glass, metal or plastic bottle, can, jar or carton containing a beverage. [b] Excluded are containers over 3L containing noncarbonated beverages, and HDPE containers.	Any individual, separate, sealed glass, metal or plastic bottle, can, jar containing a covered beverage in a quantity less than 3 fluid liters	Any airtight metal, glass, paper, or plastic container, or a combination, under 1 gallon
<b>Amount of Deposit</b>	5¢	10¢ (Increased from 5¢ as of April 1, 2017)	10¢
<b>Reclamation System</b>	Retail stores and redemption centers	Retail stores and approved redemption centers.	Retail stores
<b>Unredeemed Deposits</b>	Returned to the State	Retained by distributor/ bottlers / Oregon Beverage Recycling Cooperative (Co-Op)	None
<b>Handling Fees</b>	Beer 1.5¢, other beverages 2¢	None; Co-Op funds redemption centers in partnership with retailers from beverage deposits	75% to state for environmental programs, 25% to retailers

**Appendix B<sup>21</sup>**

**Figure B1 (from Figure 3, in text) -  
2015 Residential Waste Composition and Disposed Quantities (tons)**



**Figure B2 -  
Recoverability of Residential Wastes in Existing Curbside Programs**



**Appendix C – Summary of Legislation to Expand Connecticut’s “Bottle Bill” Over the Last Ten Years<sup>22</sup>**

Name	Title
2011HB-05200-R00-HB.HTM	AN ACT EXPANDING THE BOTTLE BILL TO INCLUDE WINE AND LIQUOR BEVERAGE CONTAINERS.
2011SB-00057-R01-SB.HTM	AN ACT EXPANDING THE BEVERAGE CONTAINER REDEMPTION SYSTEM.
2014SB-00067-R00-SB.HTM	AN ACT CONCERNING THE INCLUSION OF JUICES, TEAS AND SPORTS DRINKS UNDER CONNECTICUT'S BOTTLE BILL.
2015HB-06033-R00-HB.HTM	AN ACT CONCERNING THE INCLUSION OF JUICES, TEAS AND SPORTS DRINKS UNDER CONNECTICUT'S BOTTLE BILL.
2016SB-00384-R00-SB.HTM	AN ACT CONCERNING THE APPLICATION OF THE BOTTLE BILL TO WINE AND LIQUOR BOTTLES FOR PURPOSES OF FUNDING STATE PARKS.
2017HB-05877-R00-HB.HTM	AN ACT EXPANDING CONNECTICUT'S BOTTLE BILL.
2017HB-05880-R00-HB.HTM	AN ACT INCREASING THE AMOUNT OF THE BOTTLE DEPOSIT AND INCLUDING WINE BOTTLES UNDER THE PROVISIONS OF THE BOTTLE BILL.
2017HB-06330-R00-HB.HTM	AN ACT INCREASING THE AMOUNT OF THE BOTTLE DEPOSIT, INCLUDING TEAS, JUICES AND SPORTS DRINKS UNDER THE BOTTLE BILL AND DEDICATING ADDED REVENUES TO STATE PARKS.
2019HB-05397-R00-HB.DOCX	AN ACT CONCERNING THE INCLUSION OF NIP BOTTLES UNDER THE STATE'S BOTTLE BILL.
2019HB-05587-R00-HB.DOCX	AN ACT REQUIRING NIP BOTTLES TO BE SUBJECT TO THE BOTTLE BILL REQUIREMENTS.
2019HB-06447-R00-HB.DOCX	AN ACT CONCERNING THE EXPANSION OF THE BOTTLE BILL.
2019HB-07294-R00-HB.DOCX	AN ACT CONCERNING BOTTLE REDEMPTION IN THE STATE.
2019SB-00589-R00-SB.DOCX	AN ACT EXPANDING THE BOTTLE BILL TO INCLUDE NIPS AND SPORTS DRINKS.
2020HB-05340-R00-HB.DOCX	AN ACT CONCERNING THE MODERNIZATION OF THE CONNECTICUT BOTTLE REDEMPTION PROGRAM.

**Appendix D- – Summary of Legislation to Increase the Use of Post-Consumer Content Over the Last Ten Years<sup>23</sup>**

Name	Title
2016SB 00226 R00 SB.HTM	AN ACT CONCERNING SINGLE-USE CARRYOUT BAGS
2018SB 00428 R01 SB.HTM	AN ACT CONCERNING POST-CONSUMER CONTENT FOR PLASTIC BOTTLES SOLD IN CONNECTICUT.
2019HB 07296 R00 HB.DOCX	AN ACT CONCERNING THE RECYCLING OF GLASS.
2019SB 01003 R00 SB.DOCX	AN ACT CONCERNING THE USE OF SINGLE-USE PLASTIC AND PAPER BAGS.
2016SB-00233-R00-SB.HTM	AN ACT CONCERNING A REDUCTION OF CONSUMER-BASED PACKAGING MATERIALS.
2017SB-01000-R01-SB.HTM	AN ACT CONCERNING COMMERCIAL USES FOR RECYCLED GLASS.
2020SB 00011 R00 SB.DOCX	AN ACT CONCERNING THE RELIABILITY, SUSTAINABILITY AND ECONOMIC VITALITY OF THE STATE'S WASTE MANAGEMENT SYSTEM.
2020SB-00296-R00-SB.DOCX	AN ACT CONCERNING A MINIMUM RECYCLED GLASS CONTENT FOR WINE AND LIQUOR BOTTLES SOLD OR DISTRIBUTED IN THE NORTHEAST REGION.

## Resources:

- <sup>1</sup> Final Adopted Comprehensive Materials Management Strategy, Revised 12-14-2016; [portal.ct.gov/-/media/DEEP/waste\\_management\\_and\\_disposal/Solid\\_Waste\\_Management\\_Plan/CMMSFinalAdoptedComprehensiv eMaterialsManagementStrategy.pdf](https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/CMMSFinalAdoptedComprehensiv eMaterialsManagementStrategy.pdf). Connecticut General Statutes Section 22a-241a(a).
- <sup>2</sup> Data obtained from the Connecticut Department of Energy and Environmental Protection (DEEP), received 2-11-2020.
- <sup>3</sup> U.S. Environmental Protection Agency's 2016 Recycling Economic Information (REI) Report; <https://www.epa.gov/smm/recycling-economic-information-rei-report#findings>
- <sup>4</sup> Environmental Protection Agency (EPA), Recycling Basics; [www.epa.gov/recycle/recycling-basics](http://www.epa.gov/recycle/recycling-basics)
- <sup>5</sup> U.S. Environmental Protection Agency's (EPA) 2016 Recycling Economic Information (REI) Report; <https://www.epa.gov/smm/recycling-economic-information-rei-report#findings>
- <sup>6</sup> Data obtained from the Connecticut Department of Energy and Environmental Protection (DEEP), received 2-11-2020.
- <sup>7</sup> Connecticut DEEP, Bottle Bill FAQ; [portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Bottle-Bill-FAQ](https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Bottle-Bill-FAQ)
- <sup>8</sup> Connecticut DEEP, "Bottle Bill FAQ"; [portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Bottle-Bill-FAQ](https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Bottle-Bill-FAQ). Images provide courtesy of various artists at the Noun Project. (Gan Khoon Lay, Deemak Daksina, Adrien Coquet, Dara Ullrich, Arthur Shlain, Max Hancock, Iconstock, Nicolas Vicent)
- <sup>9</sup> <sup>9</sup> Bottlebill.org; [www.bottlebill.org/index.php/current-and-proposed-laws/usa/additional-links](http://www.bottlebill.org/index.php/current-and-proposed-laws/usa/additional-links). Personal communications with Hawaii Dept. of Health, Solid & Hazardous Waste Branch. CT DEEP; [portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Connecticut-Bottle-Bill](https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Connecticut-Bottle-Bill). CalRecycle; [www2.calrecycle.ca.gov/Docs/Web/117417](http://www2.calrecycle.ca.gov/Docs/Web/117417); [www.obrc.com/Content/Reports/OBRC%20Annual%20Report%202019.PDF](http://www.obrc.com/Content/Reports/OBRC%20Annual%20Report%202019.PDF)
- <sup>10</sup> Connecticut - [portal.ct.gov/-/media/DEEP/reduce\\_reuse\\_recycle/bottles/Bottle-Bill-Data.pdf](https://portal.ct.gov/-/media/DEEP/reduce_reuse_recycle/bottles/Bottle-Bill-Data.pdf); Oregon - [www.obrc.com/Content/Reports/OBRC%20Annual%20Report%202019.PDF](http://www.obrc.com/Content/Reports/OBRC%20Annual%20Report%202019.PDF); Michigan - [www.michigan.gov/documents/treasury/Bottle\\_Deposit\\_Information\\_6-17-20\\_694088\\_7.pdf](http://www.michigan.gov/documents/treasury/Bottle_Deposit_Information_6-17-20_694088_7.pdf).
- <sup>11</sup> Pay-As-You-Throw Trash Policy Cuts Solid Waste Disposal; <https://colsa.unh.edu/nhaes/article/2018/11/trash>.
- <sup>12</sup> U.S. Bureau of Labor Statistics, CPI Inflation Calculator; [www.bls.gov/data/inflation\\_calculator.htm](http://www.bls.gov/data/inflation_calculator.htm).
- <sup>13</sup> 2018 Handling Fee Cost Survey: Final Report June 1, 2020, <https://www2.calrecycle.ca.gov/Publications/Details/1667>
- <sup>14</sup> Connecticut DEEP, Bottle and Can Redemption Centers, <https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Connecticut-Redemption-Centers>
- <sup>15</sup> Quarterly Report of Materials Innovation and Recycling Authority Operations, For the Quarter Ending March 31, 2020; [www.ctmira.org/wp-content/uploads/2020/06/PR\\_3QFY2020\\_22a-263.pdf](http://www.ctmira.org/wp-content/uploads/2020/06/PR_3QFY2020_22a-263.pdf)
- <sup>16</sup> Northeast Recycling Council, Report on Blended Commodity Values – EPA Regions 1, 2 and 3, April 1-June 30, 2020; [nerc.org/documents/NERC-Report-on-Blended-MRF-Values-in-the-Northeast-August-2020.pdf](http://nerc.org/documents/NERC-Report-on-Blended-MRF-Values-in-the-Northeast-August-2020.pdf)
- <sup>17</sup> CalRecycle, Statewide Average Monthly Scrap Value Notice; [www.calrecycle.ca.gov/bevcontainer/scrapvalue](http://www.calrecycle.ca.gov/bevcontainer/scrapvalue).
- <sup>18</sup> Institute of Scrap Recycling Industries, China's Scrap Trade Policy; [www.isri.org/advocacy-compliance/international-trade/china](http://www.isri.org/advocacy-compliance/international-trade/china).
- <sup>19</sup> Connecticut DAS, [portal.ct.gov/DAS/Procurement/Contracting/DAS-Procurement-Environmentally-Preferable-Purchasing-EPP-Program-Information/Regulations](https://portal.ct.gov/DAS/Procurement/Contracting/DAS-Procurement-Environmentally-Preferable-Purchasing-EPP-Program-Information/Regulations)
- <sup>20</sup> www.BottleBill.org; [www.container-recycling.org/](http://www.container-recycling.org/); Oregon's Bottle Bill – Frequently Asked Questions, [www.oregon.gov/oicc/Docs/bottle\\_bill/bottle\\_bill\\_faqs.pdf](http://www.oregon.gov/oicc/Docs/bottle_bill/bottle_bill_faqs.pdf); Michigan Bottle Deposit Law - Frequently Asked Questions, [www.michigan.gov/documents/deq/dnre-whmd-sw-mibottledespositlawFAQ\\_318289\\_7.pdf](http://www.michigan.gov/documents/deq/dnre-whmd-sw-mibottledespositlawFAQ_318289_7.pdf); Connecticut-Bottle Bill FAQ, [portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Bottle-Bill-FAQ#:~:text=The%20full%20refund%20value%20\(5,account%20by%20the%20required%20date.](https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Bottles/Bottle-Bill-FAQ#:~:text=The%20full%20refund%20value%20(5,account%20by%20the%20required%20date.)
- <sup>21</sup> Connecticut DEEP, 2015 State-wide Municipal Solid Waste Composition and Characterization Study; [portal.ct.gov/-/media/DEEP/waste\\_management\\_and\\_disposal/Solid\\_Waste\\_Management\\_Plan/CMMSFinal2015MSWCharacterizationStudy.pdf](https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/CMMSFinal2015MSWCharacterizationStudy.pdf).
- <sup>22</sup> Connecticut General Assembly; [www.cga.ct.gov/](http://www.cga.ct.gov/); search for "bottle bill".
- <sup>23</sup> Connecticut General Assembly; [www.cga.ct.gov/](http://www.cga.ct.gov/); Search for "post-consumer" and "recycled content".